and then creep underneath, when, after running about and exhausting the supply, they fly off to another leaf, exactly as if they were visiting flowers. The leaves of the oaks are clean, and have no "honey-dew" on them. F. M. BURTON.

Highfield, Gainsborough, August 5.

Dredging Products.

AMONGST the products of the dredgings which my friend the Rev. J. H. Crawford and I are procuring from the Voe here, I am glad to be able to record the presence of Actinotrocha. We only got two or three specimens at first, but to-day a large number was procured from the surface net. One or two have attained to the Phoronis condition since being brought in. They answer in all respects to *Actinotrocha branchiata*, but seem to be as a rule less pigmented than the specimen found in St. Andrews Bay.

Actinotrocha branchiata has now been found on both sides of Scotland and England, and also at Heligoland; but, besides being got in the North Sea and on the west coast of Britain (*vide* NATURE, vol. xxxiv.), it seems also to be found on the western side of the Atlantic, for Wilson records it from Chesapeake Bay. It is thus distinctly a northern form, but has a wider distribution than has hitherto been supposed.

ALEXR. MEEK.

Sullom, Northmavine, Shetland, August 4.

THE INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY.

NEVER before, perhaps, in the history of science has there been assembled together such a numerous gathering of eminent men of science of different nationalities, or representing so many countries, for the purpose of discussing scientific problems.

Although it is little to the national credit that the importance of international Conferences on Health was suggested by the Belgians and not by ourselves, the conditions we are under here must not be forgotten. All other civilized countries have strongly represented among their Ministers, and among administrators, men of knowledge and competence; and elsewhere such Congresses are treated as of national concern.

Here, even in the matter of health, such powerful and economical methods of obtaining and distributing knowledge, such as Congresses like the present afford, are absolutely ignored by the party politicians to whom we commit our national welfare.

There can be little doubt that most of the good which is certain to arise from the deliberations now going on must be ascribed to the Queen and Prince of Wales, who came forward as Patron and President of a Congress ignored, as we have said, by our party rulers. This has been pointed out by the *St. James's Gazette*:—"The Prince of Wales has rendered a not inconsiderable service to his country by good-naturedly pulling the Congress out of the fire, and rendering a partial success of what came near to being a sad *fiasco*. But for his complaisance in sacrificing his holiday in coming up to London to take the chair, no public personage would have been present to welcome the two or three thousand guests bidden to the metropolis, or to give attraction and dignity to the opening meeting. . . . There are three Ministers whose departments have relation to the subjects treated by the Congress: Mr. Ritchie, who is our *quasi*-Minister of public health and relief; Mr. Chaplin, whose department deals with the hygiene and prevention of disease of animals; and Lord Cranbrook, who controls medical education. Not one of these Ministers was present yesterday. Not even the Registrar-General, the head of the department of vital statistics, or a representative of the Home Secretary, took part in yesterday's meeting. The Prince, however, saved the position."

The devoted and unpaid labours of many eminent men have, however, with this slight touch of national feeling in high quarters, already rendered the success of the Congress unparalleled, and it is really wonderful to see what they have done, in spite of the enormous difficulty of arranging for a large number of people in such a city as London. Even the facilities afforded by Burlington House and the University of London buildings do not include a hall large enough for an adequate reception room; at first, therefore, there were difficulties, largely owing to its absence. This will hardly be wondered at, when we state that the numbers enrolled already are about 3000, and that there are 40 delegates from the German Empire and 70 from India, only to give two instances.

In anticipation of the meeting, among other official documents too numerous to mention, was prepared a Hand-book to London, with special reference to the needs of the members. This is a volume of 250 pages, in French and English, with eight plates showing the position of hospitals, cemeteries, markets, and the like. This has been published by Messrs. Cassell. There is another volume of 233 pages, containing abstracts of the more important papers to be read. Nor have the English Committee been the only workers. We have "Denmark: its Medical Organization, Hygiene, and Demography," with numerous illustrations and maps, published in English by authority of the Danish Government in time for the International Congress. This has been published by Messrs. Churchill.

In spite of the abstentation of any notice on behalf of the Government, it is pleasant to note the way in which the Lord Mayor and the Corporation, the Royal Colleges of Physicians and Surgeons, and numerous other public bodies and private individuals have kept up the credit of the nation for hospitality. Among the *conversazioni* must be specially mentioned that at the Guildhall on Tuesday evening, when the Lord Mayor received the members of the Congress. It was a brilliant and impressive sight, enhanced by the uniforms of foreign officers, and the unfamiliar garbs of members of our own distant dependencies. The various social arrangements made by the organizing committee are recorded in a special pamphlet of fourteen pages.

The proceedings began on Monday by a meeting in St. James's Hall, presided over by the Prince of Wales. Sir Douglas Galton first presented the Report of the Permanent International Committee, and *inter alia* gave the following account of the general organization:—

"The work of the Congress has been arranged in two divisions, viz. hygiene and demography, and it has been found necessary to divide the former into nine sections, each under a separate president, and with separate organization. Committees have been organized in foreign countries to further the interests of the Congress in a more direct manner than could be done from England. Delegates have been appointed by all the Governments of Europe, and also by the United States, Mexico, Venezuela, Japan, Persia, Egypt, by the provinces and native states of the Empire of India, by the most important colonies, and also by numerous municipal authorities, universities, scientific and medical societies, and other institutions throughout the world, and large numbers of the most important authorities on the subjects to be treated of have sent communications to be laid before the Congress."

After the reading of this Report, the Prince of Wales opened the proceedings by a careful and sympathetic address. One part of it referred to the dangers to health inevitable to the conditions under which we live. He remarked in relation to these dangers:—

"It will be no trivial work if their sources and probable remedies can be clearly pointed out, and especially if this can be done, as in a Congress such as this it should be, in a strictly scientific manner, calmly and dispassionately, without any reference to either general or municipal politics, or for any other purpose than the promotion of health. It is only on conviction such as may thus be produced that the appointed sanitary authorities can compel the changes necessary to be made; for such changes are almost always inconvenient or injurious to some, and might even seem unjust to them, unless it be made quite clear that they would be very beneficial to the community. But my hope is that the work of this Congress may not be limited to the influence which it may exercise on sanitary authorities. It will have a still better influence if it will teach all people in all classes of society how much everyone may do for the improvement of the sanitary conditions among which he has to live. I say distinctly 'all classes,' for although the heaviest penalties of insanitary arrangements fall on the poor, who are themselves least able to prevent or bear them, yet no class is free from their dangers or sufficiently careful to avert them. Where could one find a family which has not in some of its members suffered from typhoid fever or diphtheria, or others of those illnesses which are especially called 'preventable diseases'? Where is there a family in which it might not be asked, 'If preventable, why not prevented?' I would add that the questions before the Congress, and in which all should take a personal interest, do not relate only to the prevention of death or of serious diseases, but to the maintenance of the conditions in which the greatest working power may be sustained."

The *Times*, in a leading article on the Prince's address, points out one very important practical matter in which we lag far behind many foreign countries, and which may serve as an excellent illustration of the Prince's words about inconvenience or apparent injustice to individuals. "The weak point of English sanitary law is in respect of regulations for the slaughter of animals. In London, for example, slaughterhouses are small private establishments, often situate up little alleys or courts, surrounded by dwelling-houses, and not only destitute of many conveniences which they should possess, but also affording great facilities for the slaughter of diseased animals, and for the distribution of their flesh as food. In many Continental cities public *abattoirs* have been established upon a large scale, and all private slaughtering is forbidden. At these *abattoirs* there is an abundance of space, of air, of light; there is an excellent water supply; and the slaughtering is conducted under the supervision of officials, governed by rules which not only protect cattle against unnecessary cruelty or ill-usage, but which provide for the systematic inspection of meat before it is permitted to be sold. We shall certainly hear a good deal, during the sitting of the Congress, as to the importance of preventing the consumption of the flesh of tuberculous animals; but this, however important it may be, can never be done while the innumerable small private slaughterhouses are suffered to remain."

At the conclusion of the Prince's address, speeches were delivered by representatives of France, Italy, Austria-Hungary, Saxony, and Prussia. It is pleasing to record that all bore high tribute to the part which has been played by England in the promotion of measures calculated to preserve and improve the public health. On this point, Dr. Brouardel (France) was indeed specially emphatic:—

"In the year 1837, the year of the coronation of Her Gracious Majesty, appeared the Act which rendered obligatory the registration of deaths. This Act inaugurated the era of administrative reforms concerning the public health which our valued colleague of the Local Government Board has rightly called 'the Victorian era.' This Act did not long remain alone. Under the impulse given by two of your most illustrious patriots, William Farr and Edwin Chadwick, you have organized a system of registration of the causes of diseases and of deaths. Certain important cities, before the law made it obligatory, obtained supplies of water beyond all suspicion of pollution, and adopted systems of removal of foul water and waste matters. In these cities, whose action cannot be too much praised, the sickness and death rates diminished rapidly; this furnished the necessary proof it was time for reform. Twenty years ago the Local Government Board was established, and in 1875 had submitted to Parliament a Bill for the protection of the public health. During its discussion in Parliament one of your greatest Ministers (Disraeli) pronounced in the House of Commons these memorable words, which should be repeated in all countries and in all Parliaments: 'The public health is the foundation on which repose the happiness of the people and the power of a country. The care of the public health is the first duty of a statesman.' Since this, each year you have made fresh improvements in your sanitary laws; if in your eyes they are not perfect, in the eyes of the nations who surround you they are an ideal towards which all their most ardent aspirations tend. It is your example they invoke when they claim from the public authorities the powers necessary to oppose epidemics, to combat the scourges which decimate their populations. You have taken the first rank in the art for formulating laws for the protection of health; this is not all that you have done in the domain of hygiene. Among the diseases which one can properly term pestilential, there are, thanks to the work of the hygienists of all countries, certain ones which from the present time may be considered as preventable: such are small-pox, typhoid fever, dysentery, and cholera. For one of these, the most terrible, the immunity conferred by vaccination is absolute. The person upon whom this immunity is conferred can pass through the most severe epidemics, and expose himself to all sources of contagion without being affected. Who is it who thus preserves from death, from blindness, from infirmity, millions of human beings of all countries and of all races? On May 18, 1796, a date which might well be the date of a great battle, Jenner inoculated with vaccine matter by means of two superficial incisions, the youth James Phipps. Protection against small-pox belongs to you; the world will be to you for ever obliged. Let us consider two other epidemic diseases. Is it possible to establish the conditions of propagation of typhoid fever without quoting the names of Budd or of Murchison? I am aware that in 1855 Dr. Michel de Chaumont had for the town in which he lived experimentally established the *rôle* played by drinking-water in the propagation of this disease. Unhappily, public opinion was not prepared, and his discovery was not listened to. In the work which we are considering, the efforts of the English school were most fruitful. May I recall the fact that it was the epidemic of cholera in 1866 in England, which gave birth to the theory of its propagation by drinking-water? Was it not at that date that, under the influence of your hygienists, the Lords of the Privy Council issued an order formulating the laws of prevention which we adopt to-day? Certain it is that even in England these discoveries have not immediately borne all their fruit. The anti-vaccination leagues are not yet dead. Proofs accumulated during a century have not sufficed to cure that mental blindness which is congenial. . . . Can France be represented in a Congress of Hygiene without recalling the name of M. Pasteur? For centuries we have asserted that epidemic diseases were propagated by means of contact, by the air, by the effluvia, by miasmata. The idea of morbific germs, if not the name, is even found in the works of Hippocrates, but in what an uncertain sense. The theory of contagion has passed from century to century with strange modifications; the uncertainty of the methods of research and the difficulties of observation bound up together truth and error. It remained for Pasteur to prove the existence of these germs, their form, their life, their mode of action, and by their attenuation to solve the problem of immunity. Thanks to his work, and thanks to those of his pupils, realities have succeeded to contingent possibilities. We know some of our enemies, their habits, and their mode of penetrating the body; up to this time man was conquered by these infinitesimal beings, but, thanks to recent discoveries, he will be their conqueror. When, at the beginning of a century, one can inscribe the name of Jenner, and at its end that of Pasteur, the human race may rejoice. More has been done for it against misery, disease, and death than in any one of the centuries which have preceded it. You, gentlemen, you have been the initiators; this title will never be disputed with you. When a great people has given such an example; when, by her gracious patronage, Her Majesty the Queen, and when, by his presence, His Royal Highness the Prince of Wales, testify that for them this era of reforms is not closed, it is only right that those who try to imitate them, and to give their country similar institutions, should come to bring to that people, and to their Sovereign, the homage of their profound respect."

Dr. Van Coler, the Medical Director-General of the Prussian Army, the representative of the German Government, followed suit, and showed the aid rendered to armies by the improvements in sanitary science. We give the following short extracts from his speech:—

"It is indeed with a feeling of joyous pride that from this place and in this country, where we have to trace the very cradle of all modern science of public health, I am permitted to point out how the many efforts made in the direction of hygiene radiating from England were, especially in Germany, hailed with much delight; where they received the most careful attention, and where they ever since have been most actively promoted. . . . If from our army, diseases like malaria, small-pox, dysentery, have completely, or almost completely, disappeared; if typhus fever and diphtheria become more and more diseases of the past, we have to be thankful for these attainments to the development and application of hygiene. . . . It is now an established fact that infectious diseases are by no means a necessary evil in the army. They are simply diseases which can be avoided, which can be powerfully opposed, and against which the science of our days battles victoriously with ever-increasing success."

Dr. Körösi's address will be welcome to many, as he exactly defined demography—which is a puzzle to many outsiders—and pointed out the early work done by members of the Royal Society:—

"This branch of science, the very nucleus of statistical work, which, in fact, is quite a science in its own right, has chosen the task to investigate the laws which regulate the life, increase, and decrease of nations. Its work, therefore, comprises three main parts: statistics of natality, of mortality (this part including biometry, the science of measuring the duration of human life), and of the increase of population. And when inquiring now who were the founders of this new science, we shall hear unanimously quoted the names of England's sons—Graunt, Petty, Halley, Malthus. Gentlemen, to-morrow, when we are to begin our work, we shall meet within the venerable hall of the Royal Society. The representatives of demography must feel a deep emotion when entering those rooms, which are so intimately connected with the history of their science, for this is the place where, 220 years ago, demography was created. It was in those halls, in their very first youth then, but soon conspicuous to the whole world by the genius of Newton, that appeared the work of Graunt which forms the starting-point of demography; and here the King himself, admirably appreciating the work done, recommended the author to be received as a member of the learned Society. It was there that shortly afterwards Sir William Petty, by his eminent power, raised the new science to political importance and to popularity, and in the same place, again, in 1693, the famous Halley became the founder of the most important part of demography, of biometry, by working out the first table of mortality. And now the young science, which two centuries ago left those halls shy and even without a name, has found its way over the whole globe. Having been worked out in Germany, having received a name and new ideas in France, and having been enlarged and imbued with a more scientific character by Quetelet, having got its well-equipped office in every country of the civilized world, we are proud to see now its numerous representatives meet at the same place where two centuries ago this science was born. After a triumphant career of 220 years, it returns to its home, to the old rooms in which it awoke to light, and again the Throne of England receives it with favour and benevolent interest. For demography not less than for all statistical work, it is of the highest importance that its representatives, scattered as they are over the whole globe, should fully understand each other, for only so we can accomplish our aim, that our observations comprise equally all countries of the world, that our researches are conducted and worked out on the same principles everywhere, and that we may unite the incomplete and often discrepant descriptions of the single nations to a full descriptive history of the whole of civilized mankind. This great aim fully deserves the praise the illustrious Prince Consort bestowed upon it from this very place thirty years ago. He said, 'The importance of the Congresses cannot be over-rated; they not only awaken public attention to the value of these pursuits, bring together men of all countries who devote their lives to them, and who are thus enabled to exchange their thoughts and varied experiences, but they pave the way to an agreement among different Governments and nations to follow up these common inquiries in a common spirit by a common method and for a common end.'"

The meeting was subsequently addressed by Sir James Paget, Dr. G. Buchanan (of the Local Government Board), and others.

The Sectional work of the Congress began on Tuesday. The Divisions and Sections are as follow:—

Division I.—Section 1. Preventive Medicine. President, Sir Joseph Fayrer, K.C.S.I.—Section 2. Bacteriology. President, Sir Joseph Lister, Bart.—Section 3. The Relation of the Diseases of Animals to those of Man.—Section 4. Infancy, Childhood, and School Life.—Section 5. Chemistry and Physics in Relation to Hygiene. President, Sir Henry Roscoe, M.P.—Section 6. Architecture in Relation to Hygiene. President, Sir Arthur W. Blomfield, A.R.A.—Section 7. Engineering in Relation to Hygiene. President, Sir John Coode, K.C.M.G.—Section 8. Naval and Military Hygiene. President, Lord Wantage, K.C.B., V.C.—Section 9. State Hygiene. President, Lord Basing.

Division II.—Demography. President, Mr. Francis Galton.

We shall endeavour next week to give an idea of the results of the many important discussions which may be anticipated, but it is already clear that it will be impossible for us to give anything like a full report, for the programme of work to be gone through is enormous. The addresses of the various presidents on the opening day were in themselves important communications, and well fitted to give tone to the subsequent discussions.

PROGRAMME OF TECHNOLOGICAL EXAMINATIONS.

A SIGN of the general advance in technical education is shown in the new Programme of Technological Examinations just published by the City and Guilds of London Institute. The Programme contains 37 pages of additional matter, and the number of different subjects of examination has now reached sixty. The Council appear to be genuinely desirous of adapting the examinations to the conditions of the more important trades as practised in the principal centres of industry. To this end, many